VOL'KENNEL

AUTHOR:

Nesmeyanov, A. N., Academician

20-3-26/59

Vol'kenau, N. A., Vil'chevskaya, V. D.

TITLE:

Intramolecular Acylation in the Ferrocene Series (Vnutrimolekulyarnoye atsilirovaniye v ryadu ferrotsena). The Cyclization of 7-Ferrocenyl Substituted Acids and Ketoacids (Tsiklizatsiya V-ferrotsenilzameshchennykh kislot i ketokislot).

PERIODICAL:

Doklady AN SSSR, 1958, Vol. 118, Nr 3, pp. 512-514 (USSR)

ABSTRACT:

This kind of acylation was proved by the authors in the ferrocene series (ref. 1). The present work is an extension and continuation of it. By interaction between ferrocene and the anhydride of chlorine of β -carbometoxypropionic acid β -carbometoxypropionyl-ferrocene was produced and from this β -carboxypropionyl-ferrocene. With the latter substance no cycle could be formed by the action of polyphosphoric- or sulfuric acid. Then it was reduced to ω -carboxypropylferrocene according to Klemmensen. This was easily cyclisated by heating with polyphosphoric acid. On this occasion ketohydro-indenyl-cyclo-pentadienyl-iron was formed. Its structure was proved by: 1 .- The production of a derivative after the

Card 1/3

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R001860510016-3"

Intramolecular Acylation in the Ferrocene Series. 20-3-26/59
The Cyclization of y-Ferrocenyl Substituted Acids and Ketoacids

ketogroup; 2,- Bromination which lead to pentabromocyclopentan, that is to say a non-substituted cyclopentadienyl-ring was proved in the molecule; infrared spectrum (1008 and 1106 cm-1). Furthermore the cyclization with o-carboxy-benzoyl-ferrocene was investigated. Contrary to the ferrocenyl substituted keto acids of the aliphatic series o-carboxybenzoylferrocene can easily be cyclisated with polyphosphoric- and concentrated sulfuric acid. On the same conditions this occurs also with o-carbometoxybenzoylferrocene. Thus a complete analogy with benzene derivatives is observed. As is known benzoylpropionic acid can not be cyclisated while o-benzoyl-benzoe acid easily forms anthraquinone with simple heating. The results mentioned above prove the final conclusion (ref. 1) that ferrocenyl substituted carboxylic acids are subjected to an intra-molecular acylation and this in the same cyclopentadienyl ring which already contains a substituent. The same applies even for the o-carboxybenzoyl-ferrocene in which this ring is already somehow deactivated by the COgroup in it. β -carboxypropionyl ferrocene can not at all be

Card 2/3

Intramolecular Acylation in the Ferrocene Series. 20-3-26/59
The Cyclization of 7-Ferrocenyl Substituted Acids and Ketoacids

cyclisated. The reason for this has still to be found. An experimental part with the usual data follows. There are 4 references, 3 of which are Slavic.

ASSOCIATION: Institute for Elementary-Organic Compounds AN USSR

(Institut elementoorganicheskikh soyedineniy Akademii nauk

SSSR).

SUBMITTED: August 10, 1957

AVAILABLE: Library of Congress

Card 3/3

NESMEYANOV, A.N., alademik; VOL*KENAU, N.A.; BOIESOVA, I.N.

Interaction of ferrocene with substituted aromatic compounds. Dokl. AN SSSR 166 no.3:607-610 Ja 166.

(MIRA 19:1)

CIPPER CONTROL CONTROL

1. Institut elementoorganicheskikh soyedineniy AN SESR. Submitted July 22, 1965.

L 42145-65 EPF(c)/EWP(j)/EWT(m) Pc-4/Pr-4 RM 8/0020/65/160/006/1327/1330 ACCESSION HR: AP5007661

AUTHORS: Nesmeyanov, A. N. (Academician); Vol'kenau, N. A.; Shilavtsuva, L. S.

TIFLE: Exchange of the ligand in replaced ferrocenes (

SOURCE: AN SSSR. Doklady, v. 160, no. 6, 1965, 1327-1530

TOPIC TAGS: ferrocene, ligand, iodine, borate

ABSTRACT: The authors carried out reactions of mono- and 1,1'-dicttylferrocenes, with benzene and mes tylene, of mono- and 1,1'-diacetylferrocene with mesitylene, and of monocyano-, monophenyl-, and 1,1'-diphenylferrocenes with benzene. As a result, they obtained a number of cations in the form of tetraphenylborates, result, they obtained a number of cations in the form of tetraphenylborates, and indicates. The decomposition temperature and melting points were determined for these compounds and were found to depend strongly on the rate of heating. The data obtained indicate that the substitutes in the ferrocene nucleus have a strong influence on the exchange of liquids. In the reaction with mesitylene, at 90-100C, 1,1'-diethylferrocene formed 32% ethylcyclopentadienyl-mesitylene iron, and 1,1'-diacetylferrocene yielded 20% cyclopentadienyl-mesitylene iron. At 120-130C the diethylferrocene yielded 4% acetylcyclopentadienyl-mesitylene iron. At 50C diacetylferrocene fraction increased to 30% and the diacetylferrocene to 22%. At 50C diacetylferrocene did not react with mesitylene, and dietylfarrocene formed only 9% [Card 1/2]

L 42145-65 ACCESSION NR: AP5007661

ethylcyclopentadienyl-mesitylene iron. Interaction between acetyl-ferrocene and ethylcyclopentadienyl- and cyclopentadienyl- mesitylene yielded a mixture of acetylcyclopentadienyl- and cyclopentadienyl- mesitylene iron. These could not be separated chromatographically. Fractional mesitylene iron. These could not be separated chromatographically. Fractional crystallization showed the content of the first to be 80-90%. These results show that for monoalkyl-ferrocene the substituted ring is exchanged chiefly, but for mono-acetylferrocene exchange is with the unsubstituted ring. Orig. art. has: 1 table.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy, Akademii nauk: SSSR (Institute of Hetero-Organic Compounds, Academy of Sciences SSSR)

SURMITTED: 25Sep64

ENCL: 00

SUB CODE: OC, GC

NO REF SOV: 001

OTHER: 000

Card 2/2 CC

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R001860510016-3"

S/020/63/149/003/024/028 B117/B186

AUTHORS:

Nesmeyanov, A. N., Academician, Vol'kenau, N. A.

Bolesova, I. N.

ጥተጥ፣ ፱ •

Ligand exchange in ferrocene

PFRIODICAL:

Akademiya nauk SSSR. Doklady, v. 149, no. 3, 1963, 615-618

TEXT: The replacement of a cyclopentadienyl ring by other ligands, performed for the first time, is described. When ferrocene is heated with aromatic hydrocarbons in the presence of aluminum chloride, one of the rings of the ferrocene core is replaced by an aromatic ring and a single charged cation of the aren-cyclopentadienyl iron is formed. Undesired oxidation of the ferrocene brought about by the AlCl₃ can be prevented by adding a reducing agent (aluminum powder). In this way tetraphenyl borates of the following compounds were produced: of benzene-cyclopentadienyl iron C₃₅H₃₇BFe, decomposition point 250-251°C; of mesitylene-cyclopentadienyl iron C₃₆H₃₇BFe, m.p. 257-258°C; of tetralin-cyclopentadienyl iron C₃₆H₃₇BFe, m.p. 257-258°C; of tetralin-cyclopentadienyl iron C₃₆H₃₇BFe,

Card 1/3

Ligand exchange in ferrocene

S/020/63/149/003/024/028 B117/B186

m.p. 237.5-238.5°C. The reaction with naphthalene takes a similar course. The ligand exchange reaction also takes place for substituted ferrocenes, but is more complicated than with ferrocene. Heating diacetyl ferrocene with mesitylene in the presence of AlCl, gave the tetraphenyl borate of mesitylene-acetylcyclopentadienyl iron: C40H39OBFe, m.p. 197-198Oc (decomposition point 199-200°C). The compounds produced are crystalline, yellow to light orange, highly soluble in acetone, dichloro ethane, acetonitrile, insoluble in alcohol, ether and benzene. As solids they are resistant to atmospheric oxygen. Decomposition, which soon occurs in organic solvents, is accelerated by light. Cations of the aren-cyclopentadienyl iron are fairly resistant to acids. The synthesis of iodides of benzene-cyclopentadienyl iron is described; it produced the following compounds: benzene-cyclopentadienyl iron triiodide, violet-red crystals, decomposition point 226-227°C. A black polyiodide of undetermined iodine content formed in the presence of iodine and KI (1:1). It was converted into trilodide by alcoholic KI as well as by reduction with a smaller amount of Na, SO,. Energetic reduction of polyiodide and triiodide produced benzene-cyclopentadienyl iron iodide: C11H11FeI, yellow crystals, soluble

| | g/020/67/149/007/021/029 | |
|------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| Ligand exchang | s/020/63/149/003/024/028 ge in ferrocene B117/B186 | |
| tetraphenyl bo naphthalene de | alcohol, m.p. 230-230.5°C. Thermal decomposition of the orates in vacuo produced ferrocene, some iron and, from the erivative, also naphthalene, probably owing to cleavage of hydrocarbon and disproportionation of the residue. | |
| ASSOCIATION: | Institut elementoorganicheskikh soyedinemiy Akademii nau SSSR (Institute of Elemental Organic Compounds of the Academy of Sciences USSR) | k |
| SUBMITTED: | February 18, 1963 | |
| | 왕하는 마루를 보자 물론으로 돌아보고 있다고 있다. 그런 사이트 보고 있는 것을 하는 것을 받는데 보다 하는데 | |
| 지 2016년 2012년 대 2 등 2 년 1일 중요. 12 - 12 년 12 년 12 년 12 등 12 등 2 년 2013년 12 일 대표 12 년 12 등 2 년 2 | 성이 경험하는 보고 있어요. 그는 사람들은 보고 있는 것이 되는 것이 되었다. 그는 것이 되었다. 1985년 1일 | |
| | 강하는 사용하는 경우에 가장을 받는데 하는데 하는데 하는데 하는데 하는데 되었다. 그런데 그런데 하는데 있는데 하는데 하는데 하는데 하는데 하는데 하는데 하는데 하는데 하는데 하 | |
| Card 3/3 | | |
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ENERGE CONTROL OF THE PROPERTY OF THE PROPERTY

NESMEYANOV, A.N.; VOL'KENAU, N.A.

Some chromium arencarbonyls. Izv. AN SSSR. Otd. khim. nauk no.2: 367-368 F '61. (MIRA 14:2)

1. Institut elementoorganicheskikh soyedineniy AN SSSR. (Chromium carbonyl)

NESMEYANOV, A.N., akademik; VOL'KENAU, N.A.; HOLESOVA, I.N.

Exchange of ligands in ferrocene. Pokl.AN SSSR 149 no.3: 615-1618 Mr '63. (MIRA 16:4)

1. Institut elementoorganicheskikh soyedineniy AN SSSR. (Ferrocene) (Complex compounds)

VOL'KENAU, N.N., agronom, kand. nauk, red. VOLKOVA, M.I., st. red.

[Collection of research papers on agriculture] Sbornik nauchno-issledovatel'skikh rabot po sel'skomu khoziaistvu. Toms, Izd-vo Tomskogo univ., 1962. 89 p. (MIRA 16:3)

1. Tomskaya gosudarstvennaya sel'skokhozyaystvennaya opytnaya stantsiya.

(Tomsk Province--Agriculture)

| L. | ACT, KENVA | V . A. | Eng. | SHERE THIS. | A. | .N. Inc | |
|----|------------|--------|------|-------------|----|---------|--|

- 2. USSR (600)
- 4. Electric Lines
- 7. Insulation standards for 110-220 kilovolt electric transmission lines on metal supports. Elek. sta. 23 No. 2, 1953.

9. Monthly List of Russian Accessions, Library of Congress, June 1953, Unclassified.

VOL'KENAU, V. A.

Subject : USSR/Electricity AID P - 2359

Card 1/1

Pub. 27 - 23/30

Authors

: Vol'kenau, V. A. and Gershengorn, A. I., Engs.

Title

: Certain characteristics of super-high voltage electric power transmission lines (Review of foreign periodicals)

Periodical: Elektrichestvo, 5, 82-83, My 1955

Abstract

: The authors summarize an article by R. G. Wolff in Modern Power Engineering, v.47, No.2, 1953. Three tables, 1

Institution:

None

Submitted : No date

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R001860510016-3"

VOL'KENAU, V.A., inzhener.

Cutting off small currents with high-voltage circuit breakers.

Elektrichrstvo no.2:84-86 F'56. (MLRA 9:5)

(Electric circuit breakers)

2/019/61/018/011/005/005 D006/D102

AUTHORS:

Bezrukov, F. V., Volkenau, V. A., Galkin, Yu. P., et al.

TITLE:

Standard series of basic parameters of tube lightning-arresters

PERIODICAL:

Přehled technické a hospodářské literatury, Energetika a elektrotechnika, v. 18, 1961, no. 11, 504, abstract # E 61-6968. Vestn. Elektroprom. 31, December 1960, no. 12, 27-31

TEXT: The article presents a review of lightning-arrester types currently produced in the USSR, and lists additional types for 6 - 220 kV and 35-220 kV which should be produced. The original article contains 6 tables. [Abstracter's note: The above text is a full translation of the Czech abstract].

Card 1/1

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R001860510016-3"

PRUZHININA-GRANOVSKAYA, V.I., kand.fiz.-matem.nauk; VOL'KENAU, V.A., inzh.

Dependence of lagging voltages in a discharger on the length of the current wave front. Elektrichestvo no.10:53-54 0 '61.

(MIRA 14:10)

1. Vsesoyuznyy elektrotekhnicheskiy institut im. Lenina. (Electric protection)

S/196/61/000/009/040/052 E194/E155

AUTHOR: Vol'kenau, V.A.

TITLE: The impulse transmission capacity of carborundum

PERIODICAL: Referativnyy zhurnal, Elektrotekhnika i energetika, no.9, 1961, 39, abstract 9I 248. (Vestn. elektroprom-

THE SECOND SECON

sti, $\frac{1}{100}$ no.4, 1961, 48-51)

TEXT: To increase the current-carrying capacity of the resistances in arresters, powder of electrical grade carborundum (SiC) was studied to find how grain size, carborundum grade, compressive forces acting on the grains, and methods of filling the spaces between grains, affected the current-carrying capacity. It is recommended to use coarse-grained high-electrical resistance grades of carborundum in water. It is noted that increasing the gas pressure in the pores between 0.1 and 10 atm increases the current-carrying capacity under short transients and reduces it under long; in gases of low electric strength the capacity under short transients is reduced but remains unchanged under long transients. Alteration in the mechanical pressure or granulometric composition has little effect upon the non-linearity Card 1/2

The impulse transmission capacity...

S/196/61/000/009/040/052 E194/E155

of the powder. The current-carrying capacity of the powder under short transients is considerably higher than that of 'Vilit' and 'Tervitov' discs made of this powder. For all methods of application, increase in the electrical conductivity of the carborundum powder increases the current-carrying capacity. 6 figures. 10 literature references.

を表現している。 1987年による。 1987年による。

[Abstractor's note: Complete translation.]

Card 2/2

VOL'KENAU, V.A., inzh.; GALKIN, Yu.P., kand.tekhn.nauk

Types of tubular and valve-type a.c. dischargers. Vest. elektroprom. 33 no.5:79-80 My '62. (MIRA 15:5) (Electric protection) (Electric power distribution—Equipment and supplies)

VOL'KENAU, V. A.

" Conductivity of Carborundum."

Dissertation defended for the degree of Doctor of Technical Sciences, at the All-Union Electrotechnical Institute, December 1962.

Moscow, Elektrichestvo, No.9 Sept po 94-95.

EWT(1)/FCC ACC NR: AP6006728 (A) SOURCE CODE: UR/0292/65/000/011/0013/0035 AUTHOR: Vol'kenau, V. A. (Candidate of technical sciences) ORG: none TITLE: Quality tests of valve-type lightning arresters SOURCE: Elektrotekhnika, no. 11, 1965, 33-35 TOPIC TAGS: lightning, lightning arrester ABSTRACT: Existing Soviet standards on testing h-v lightning-arrester materials (tervit) have allowed the high probability that a considerable number of defective disks may remain undetected. It was experimentally found that one defective disk in the arrester unit caused (in 80-90% of cases) breakdown or flashover of the entire unit (which consisted of 3 parallel stacks, 8 disks in each). Hence, measures to improve testing methods were taken: a probability distribution curve for test-destroyed disks was determined; integral probability curves (0.01-sec current surge, 20 discharges) were plotted; a curve of guaranteed current-carrying capacity vs. variance was plotted; and heavier test currents were assigned. These steps enhanced the reliability of the quality-control process. Orig. art. has: 3 figures, 4 formulas, and 2 tables.

SUB CODE: 09 / SUBM DATE: none

Card 1/1 (1/1)

UDC: 621.316.933.6

VOL'KENAU, V.A., kand.tekhn.nauk

Control tests of valve-type dischargers. Elektrotekhnika 36 no.11:33-35 N 165. (MIRA 18:11)

VOLKENS, N.V.

KOMAR, A. P., VOLKENS, N. V.

Relation of the Coercive Force and of the Magnetization of Ni₃Mn Alloy to the Degree of Order of Atomic Distribution. **ZhETF 11**, 723, 1941. Institute of Physico-Chemical Analysis 16, 105, 1943.

S/196/61/000/009/008/052 E194/E155

AUTHORS: Vol'kenshteyn, A.A., and Gavanin, V.A.

TITLE: The photometric characteristics of vacuum photocells illuminated by impulse lamps

PERIODICAL: Referativnyy zhurnal, elektrotekhnika i energetika, no.9, 1961, 5, abstract 9V 35. (Svetotekhnika, no.2, 1961, 12-18.)

TEXT: Vacuum photocells are often used in the photometry of impulse lamps. With impulse illumination the level of luminosity on the cathode may be higher than that at which amomalous effects occur in the operation of the vacuum photocell with constant illumination. This is attributed to formation of a space charge, to the low conductivity of the light-sensitive layer, and to secondary electron emission. The flash duration of various types of impulse lamp varies from fractions of a microsecond to thousands of microseconds. For the same illumination (candle-seconds) the instantaneous luminosities from such lamps differ by several orders. In the photometry of impulse lamps the type of vacuum photocell and its operating conditions must be so Card 1/2

The photometric characteristics ...

S/196/61/000/009/008/052 E194/E155

selected that anomalous effects do not occur within the range of measurement. Therefore a linear relationship should be maintained between the light magnitudes which govern the conditions of illumination of the photocell (the amount of illumination, the peak or mean illuminance during the flash time) and the electrical values which characterise the passage of current in the photoelectric cell circuit during the flash (the quantity of electricity, the peak value of the photo current). The characteristics of vacuum photocells are given in the form of graphs and tables.

8 figures, 3 literature references.

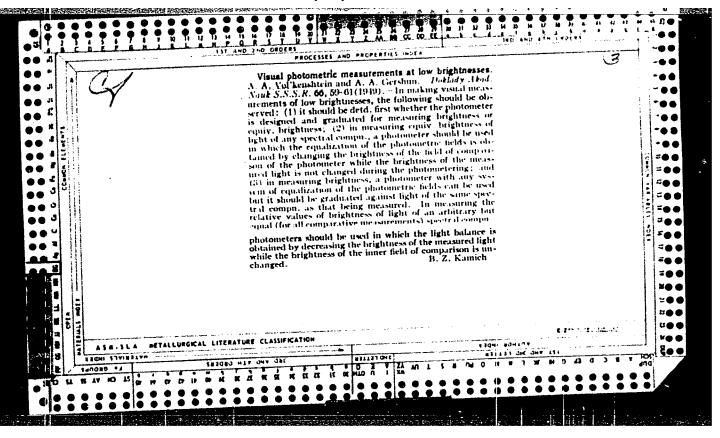
Abstractor's note: Complete translation.

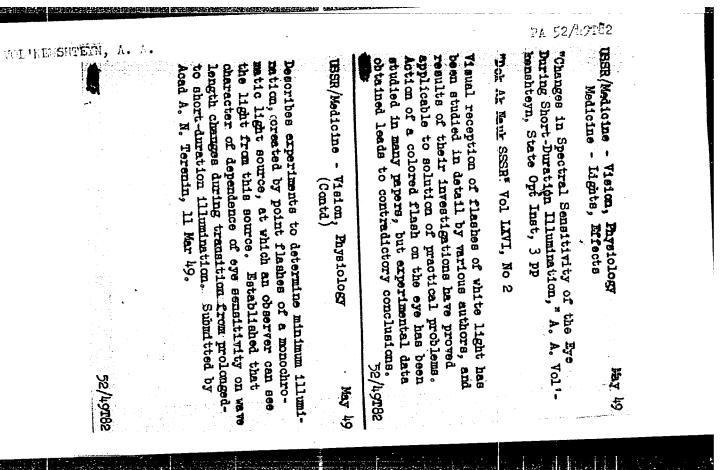
Card 2/2

VOL*KENAU, V.A., inzh.

Device for controlling and testing the elements of valve dischargers. Elektrotekhnika 34 no.10:72-73 0 '63.

(MIRA 16:11)





VOLKENSHTEYN, A. A.

PA 240T105

USSR/Physics - Light Measurement

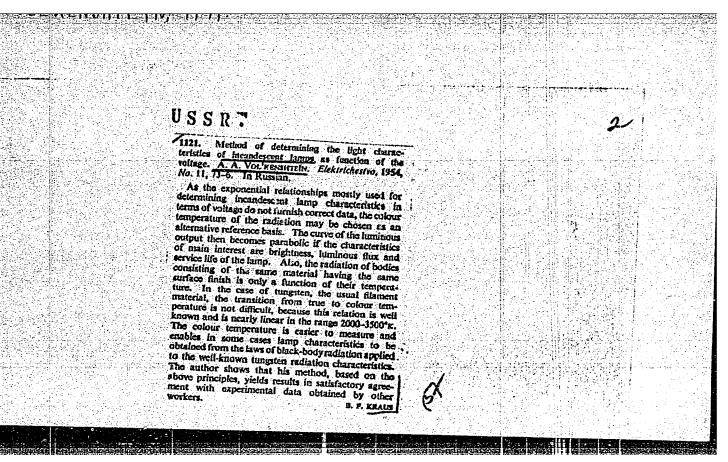
Dec 52

"Optical Method of Measuring Intensity of Light, Brightness and Plux," A. A. Volkenshteyn, D. I. Andreyev and V. I. Isayenko

"Zhur Tekh Fiziki" Vol 22, No 12, pp 2026-2037

Optical measuring method was tested theoretically and experimentally. Results showed adequate accuracy of measurements. The equipment may be used in plants and on expeditions. Received 22 Sep 52.

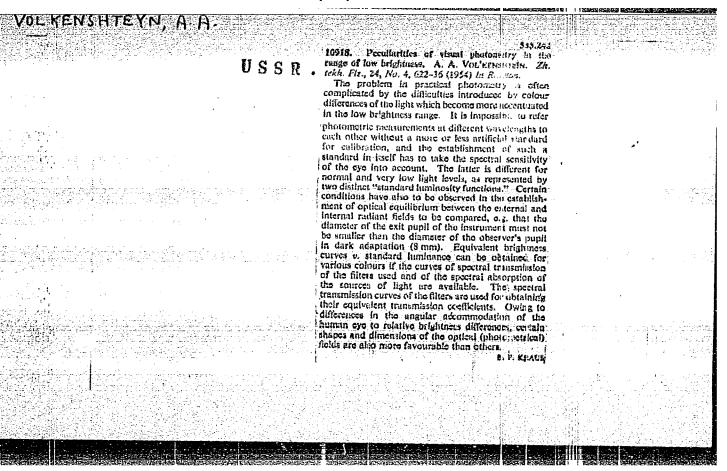
24C/T105



VOL KENSHTEYN, A.A., kand.tekhn.nauk

In regard to S.G.IUrov's article "General scheme for the construction of photometric magnitude systems." Svetotekhnika 5 no.9:26-28 S '59. (MIRA 13:2)

1. Gosudarstvennyy opticheskiy institut. (Photometry) (IUrov. S.G.)



VOL'KENSHTEYN.A.A., kandidat tekhnicheskikh nauk; TARKHOVA,A.A., inzhener

New photometer track. Svetotekhnika 1 no.1:19-21 F 155.
(MIRA 8:9)

1. Gosudarstvennyy opticheskiy institut (Photometry)

VOL'KENSHTEYN, A.A., kandidat tekhnicheskikh nauk

Photometer for the measurement of low intensity brightness. Svetotekhnika 1 no.4:1-4 Ag '55. (MLRA 8:9)

1. Gosudarstvennyy opticheskiy institut (Photometry)

VOL'KENSHTEYN, A.A., kandidat tekhnicheskikh nauk

Calculations in the field of low intensity brightness. Svetotekhnika 1 no.5:7-11 0'55. (MIRA 8:12)

1. Gosudarstvennyy opticheskiy institut (Lighting)

VOLOKENSHILLYN, H.A. USSR/Physics - Optics

FD-3116

Card 1/1

Pub. 153 - 15/24

Author

Title

: Vol'kenshteyn, A. A.

- Commence to the same to be a second to the same of t

: Addition of small brightnesses

Periodical

: Zhur. tekh. fiz., 25, No 6 (June), 1955, 1100-1104

Abstract

: The author experimentally shows that under the conditions of the conducted experiments the special law of the addition of equivalent brightnesses is observed within the limits of errors of measurements for an extensive region of small brightnesses and for light of various spectral composition. He thanks M. I. Golland, Ye. I. Dikan', P. P. Zakharov, and Ye. O. Fedorova for their help. Six references: e.g. A. A. Vol'kenshteyn and D. I. Andreyev, Probl. fiziolog. optiki, 8, 55-68, 1953; S. G. Yurov, Probl. fiziolog. opt., 10, 59-62, 1952.

Institution

Submitted : Septe

: September 8, 1954

GERSHUN, Andrey Aleksandrovich; VOLKENSHTWYN, A.A.; GUREVICH, M.M.;

IAZAREV, D.N.; FEDOROVA, Ye.O.; ORLOVA, L.I., red.;

POL'SKAYA, P.G., tekhn. red.

[Selected papers on photometry and illuminating engineering]

Izbrannye trudy po fotometrii i svetotekhnike. Moskva, Gos.

izd-vo fiziko-matematicheskoi lit-rv, 1958. 548 p. (MIRA 11:9)

(Photometry (Lighting)

VGL'KENSHTEYN, A.A., kand.tekhn.nauk; KUVALDIN, E.V., inzh.

Photometric evaluation of directed light impulses. Svetetskhnika 10 no.2:15-17 F '64. (MIRA 17:4)

1. Gosudarstvennyy opticheskiy institut.

L 07040-67 EWT(1)/EEC(k)-2/EWP(k) IJP(c) WG/GG
ACC NR. AP6027128 (#) SOURCE CODE: UR/0311/66/000/006/0022/0024

AUTHOR: Vol'kenshteyn, A. A. (Candidate of technical sciences); Yefremov, V. P. (Engineer); Kuvaldin, E. V. (Engineer); Matveyeva, O. K. (Engineer); Sazonov, V. M.

(Engineer)

ORG: None

TITLE: Photometric equipment for pulsed light sources

SOURCE: Svetotekhnika, no. 6, 1966, 22-24

TOPIC TAGS: photometer, light pulse, laser pulsation, flash lamp

ABSTRACT: A unit for photometric measurement of pulsed light sources is described. This unit consists of three instruments: an FILT photometer for flash lamps, an FML-m photometer for lasers and a KOS standard light pulse generator. The FIL photometer may be used for measuring nearly all types of industrial flash tubes and the FML-m is used for measuring the radiation from free-emission lasers. The KOS instrument generates reproducible standard light pulses and is used for calibration of the two photometers. Photographs of each of the component instruments are given together with brief descriptions. The flash tube photometer may be used for measuring the luminous intensity of a light source with a maximum transverse dimension of 110 mm. The fundamental scale of the instrument has graduations of 100 candles/div, 105 nits/div and

Card 1/2

UDC: 535.242.2

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R001860510016-3"

L 07949-67

AP6027128 ACC NR:

10-3 ca·sec/div. These graduations may be expanded by five orders of magnitude for measuring higher intensities by changing the resistance of the load on the photocell or by using neutral light filters. The time characteristics of the instrument are: least resolved duration of the leading front -- 5.10 7 sec, pulse duration -- no more than 10⁻² sec. The approximate value of a graduation on the FML-m photometer is 10 w and 10⁻⁴ joules per unit of the reference scale. The upper limits of measurement are 10° w and 10° joules. The unit may be used for laser measurements in the 400-1100 mu spectral region. The time resolution of the photocell is a few tenths of a microsecond. The KOS instrument generates pulses with a duration of approximately 3 usec and a luminous intensity of 200,000 ca. The authors consider it their pleasant duty to mention the considerable part played by N. F. Shipul', L. I. Mel'nixova, R. V. Tsyvkin, V. M. Shpan'kov and V. N. Kornilov in development of this photometric equipment. Orig. art. has: 3 figures.

SUB CODE: 13, 20/ SUBM DATE: None/ ORIG REF: 005

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R001860510016-3"

VOL'KENSHTEYN, Andrey Aleksandrovich; GORODINSKIY, G.M., neuchn.

[Visual low-brightness photometry] Vizual naia fotometriia malykh iarkostei. Moskva, Energiia, 1965. 141 p. (MIRA 18:4)

VOL'KENSHTEYN, A.A.; GORODINSKIY, G.M.; GUREVICH, M.M.; GUREVICH, N.N.; GUSEV, N.M.; KOZLYANINOV, M.V.; LAZAREV, D.N.; LEVITIN, I.B.; MESHKOV, V.V.; POPOV, O.I.; SAMSONOVA, V.G.

Andrei Aleksandrovich Gershum. Svetotekhnika 8 no.12:1-3 D '62. (MIRA 16:1)

(Gershun, Andrei Aleksandrovich)

VOL'KENSHTEYN, A.A., kand.tekhn.nauk; GAVANIN, V.A., inzh.

Photothermal characteristics of vacuum phototubes with illumination by flashtrons. Svetotekhnika 7 no.2:12-18 F '61. (MIRA 14:10)

5/196/62/000/012/008/016 E194/E155

AUTHOR:

Vol'kenshteyn, A.A.

TITLE:

An optical method of increasing the contrast on

cathode-ray tube screens

PERIODICAL: Referativnyy zhurnal, Elektrotekhnika i energetika,

no.12, 1962, 2, abstract 12 V10. (Svetetekhnika,

· no.2, 1962, 17-20)

The visibility of an image on a screen of a cathode-TEXT: ray tube may be improved by increasing the contrast between the image and background by means of a light filter fitted between the observer and the screen. The table gives calculated values of contrast for white radiation of a television screen ($\rho = 0.6$) with external lighting by incandescent lamps. If the spectral regions in which the radiations from the screen and from the external lighting are concentrated are sharply delineated, it is advisable to use selective light filters. Polaroid films can sometimes be used to limit access of outside light to the screen. The contrast can also be increased by reducing the scatter of light caused in the tube and in the thickness of its glass face by Card 1/2

> APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R001860510016-3"

ensemble en entre i en la minimo i sen entre en entre en entre en la consecue de la consecue de la consecue de

An optical method of increasing the ... 5/196/62/000/012/008/016 E194/E155

multiple reflection of the actual radiation of the screen.

2 illustrations. 8 literature references.

ASSOCIATION: Gosudarstvennyy optich. in-t, Leningrad
(State Optical Institute, Leningrad)

| Optical inst | | | | | | |
|-----------------|---------------------------------------------------|-------|---------------------|--------------------------------------------------|--|--|
| Image | Illuminance of screen from external source, lux. | | | | | |
| | | | | | | |
| 1 - | 0 | 100 | 300 | 3000 | | |
| ilter t in n.t. | | | Contrast | | | |
| 100 | 1 | 0.83 | 0.62 | 0.14 | | |
| | 1 | 0.94 | 0.85 | 0.36 | | |
| • | 1 | 0.97 | 0.92 | 0.53 | | |
| 10 | 1 | 0.99 | 0.97 | 0.77 | | |
| | Image brightness in n.t. 100 60 30 | Image | Image Illuminance | Image Illuminance of screen external source. | | |

Abstractor's note: Complete translation.

Card 2/2

VOL'KENSHTEYN, A.A., kand.tekhn.nauk.

Transmittance coefficient of selective filters in mesopic vision. Svetotekhnika 6 no.9:8-13 S '60. (MIRA 13:9)

1. Gosudarstvennyy opticheskiy institut. (Light filters)

VOL'KENSHTEYN, A.A., kand.tekhn.nauk; OSHMARIN, A.G., inzh.

VFM-57 visual laboratory photometer (for low brightness). Svetotekhnika 4 no.12:19-21 D: 58. (MIRA 11:12) (Photometers)

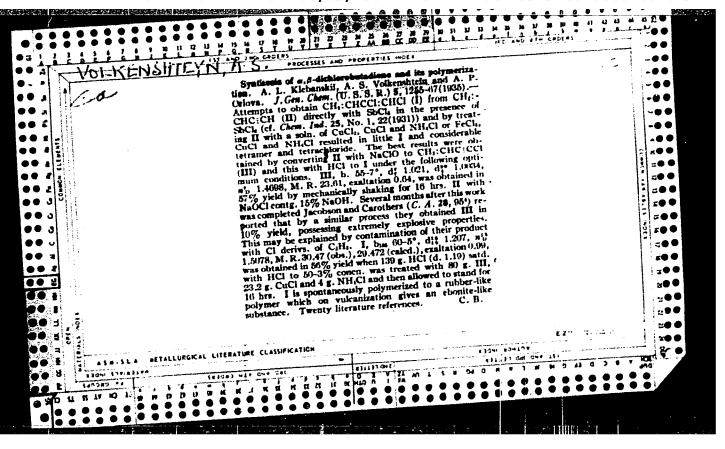
VOL'KENSHTEYN, A.A., kand. tekhn. nauk.

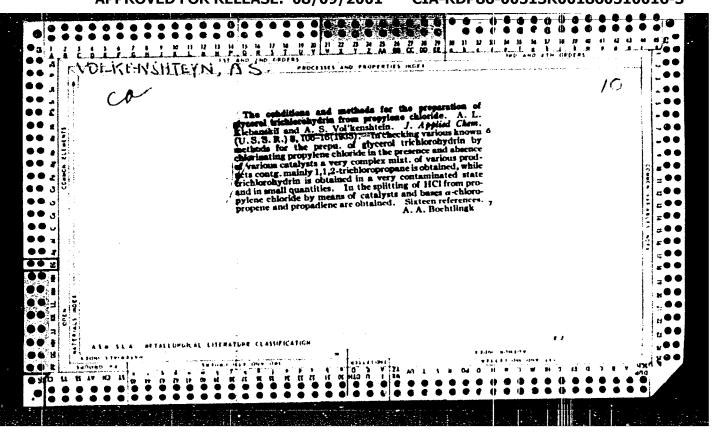
Summation of small luminosites. Svetotekhnika no.1:18-24 Ja '59.

(MIRA 12:1)

1.Gorudarstvennyy opticheskiy institut.

(Photometry)





VOL'KENSHTEYN, B. M.

UBSR/Sugar 4304.0300

Oot 1947

"Instructions on Accounts between Plants Concerning Beets Which Have Been Turned Over for Further Processing," B. M. Vol'kenshteyn, Dzhambul Sugar Ref:inery, 3 pp

"Sakhar Prom" Vol XX, No 10

Main Administration of Sugar Industry (Glavsakhar) issued new instructions on order of transfer and accounts between sugar refineries and beet storage bases (sveklobazi). Instructions concerned shipping sugar beets for further processing, but were worked out on a high level and lacked certain practical operational qualities. Author suggests detailed changes in these instructions.

VOL KENSHTEYN, B.M.

Sugar Industry

Analysis of production cost of granulated sugar. Sakh.prom 26 No. 9, 1952.

9. Monthly List of Russian Accessions, Library of Congress, December 1952 1987, Uncl.

VOL'KENSHTEYN, B.M.

Methods of analyses for determination of sugar losses in beets.

Sakharnaya Prom. 26, No.11, 29-32 '52. (MLEA 5:12)

(CA 47 no.13:6688 '53)

VOL'KENSHTEYN, B. M.

Beets and Beet Sugar - Transportation

Charges for automotive transportation of sugar beets. Sakh. prom. 27, No. 3, 1953.

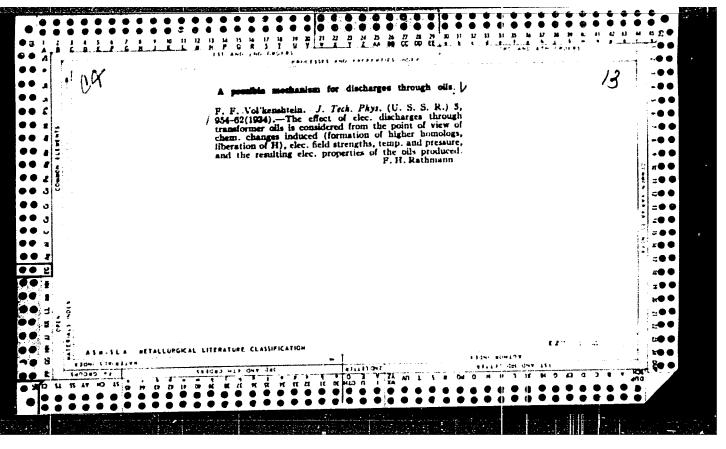
Jume 1953, Unclassified. 9. Monthly List of Russian Accessions, Library of Congress,

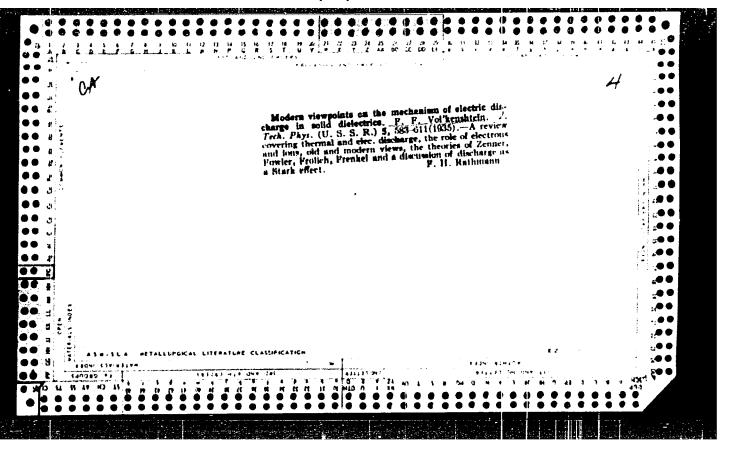
VOL'KENSHTEYN, B.M.

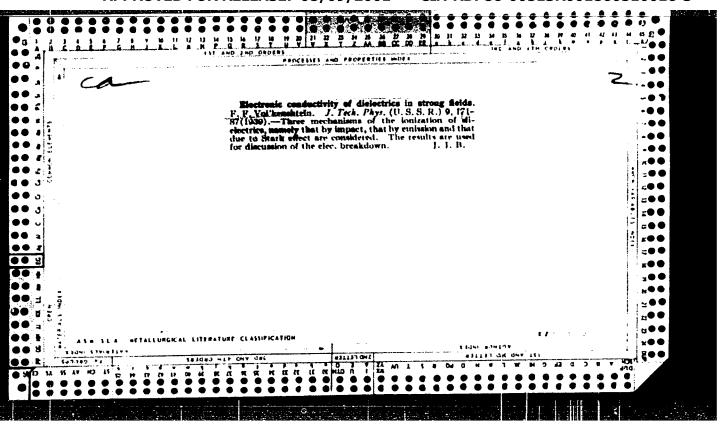
Erroneous suggestion (variation in the rendement of brown sugar). Sakh. prom. 27 no.4:38 Ap '53. (MLEA 6:6)

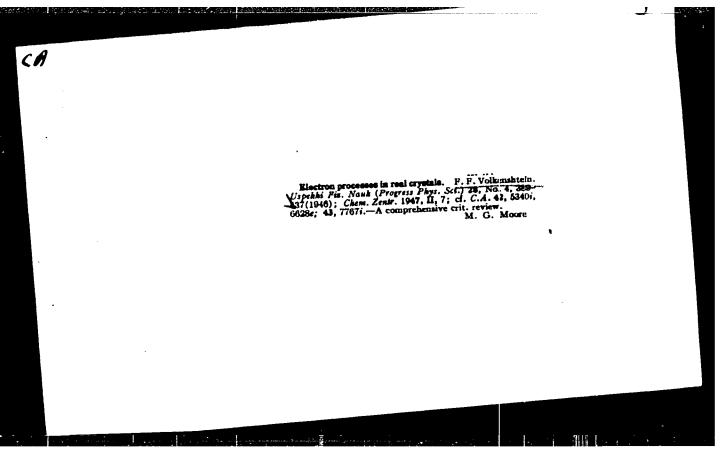
1. Karlamanskiy sakharnyy zavod.

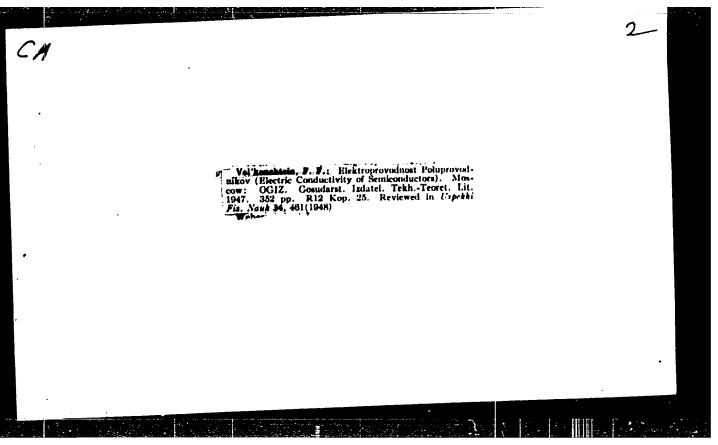
(Sugar industry)

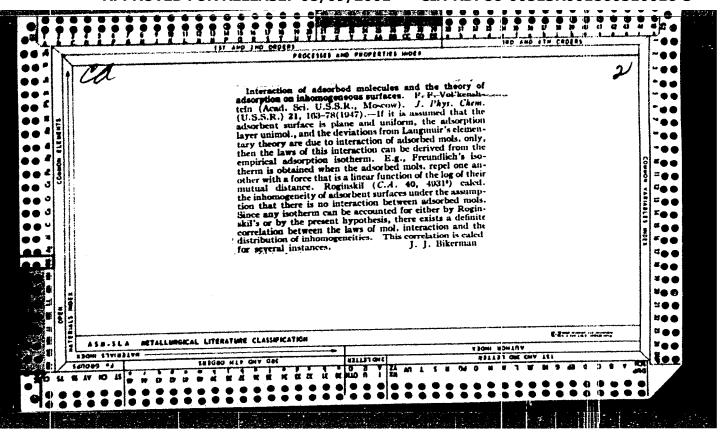


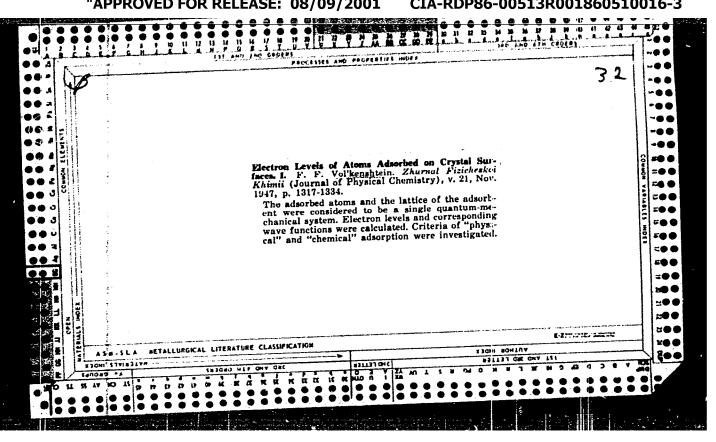


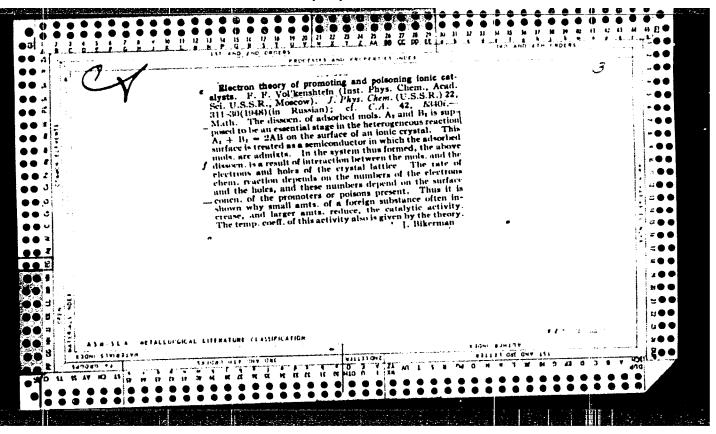






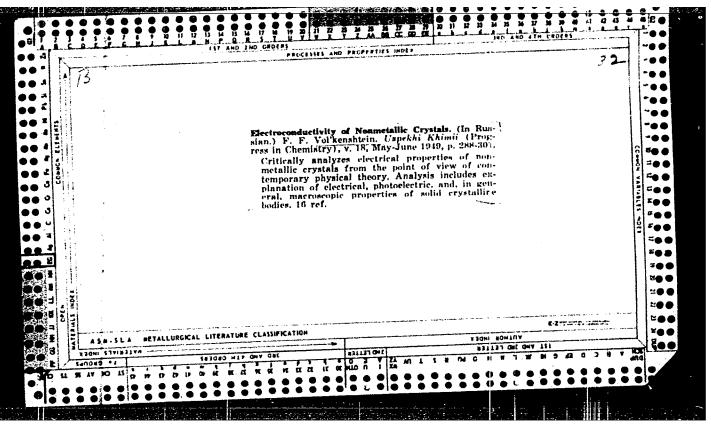






VOL KENSHTEYN, F.F.

Certain adsorption peculiarities conditioned by "thermal disorder" on crystal surfaces. Probl.kin; kat. 7:360-382 149. (MIRA 9:9) (Adsorption) (Thermal analysis) (Crystallochemistry)



VOLIZONSHIETN, F. F.

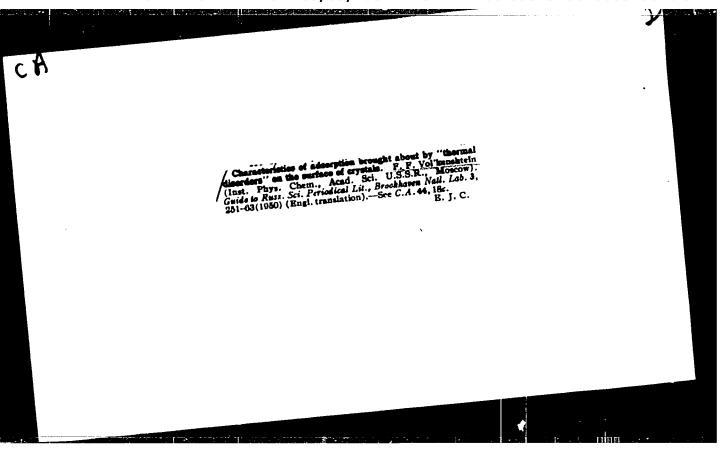
<u>Vol'kenshtein, F.F.</u>, Concerning certain peculiarities of adsorption due to a "heat disorder" on the surface of the crystal. P. 917

The adsorption of gas molecules on the surface of a crystal for the case where the number of adsorption centers changes with temperature is examined. The adsorption centers are treated as defects of the surface, that is, as local disturbances of the periodic structure of the lattice. The kinetics of adsorption under definite conditions will be exactly the same as in the case of the so-called "activated" adsorption, although the activating barrier is absent. The isotherm of adsorption is of type Q.p. The differential adsorption heat is a function of filling, although the surface is homogeneous in energy and the interaction between the adsorbed molecules is disregarded.

Inst. of Physical Chemistry
Dept. of Catalysis and Topochemistry
Ac d. of Sci., USSR
Moscow
July 14, 1948

SO: Journal of Physical Chemistry, (USSA) 23, No. 8, (1949)

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R001860510016-3"



VOL'KENSHTEYN, F. F.

168 **T91**

USSR/Physics - Electrons Crystals, Ionic Jul 50

"Behavior of Electrons in Ionic Crystals," F. F. Vol'kenshteyn, V. L. Bonch-Bruyevich, Inst. of Phys Chem, Acad Sci USSR

"Zhur Eksper i Teoret Fiz" Vol XX, No 7, pp 624-635

Considers ionic crystal containing "excess" electrons (conduction electrons). Behavior of these electrons is considered to be multi-electron problem and is solved completely for case of two "excess" electrons. Shows that among possible states of system there exist states corresponding to individual and paired electrons. Submitted 19 Dec 49.

168T91_

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R001860510016-3"

Effect of small quantities of impurities on the estalytic activity of ionic catalysts. F. F. Vol'kenshteln (Inst. Phys. Chem. Acad. Sci. U.S.S.R., Moscow). "Zhav. Fis. Khim. 24, 1068-82(1950).—The catalyst surface is treated as a two-dimensional semi-conductor (Tamm levels, cf. V. C.A. 42, 6628c). Chemisorhed atoms or mois, and promoters or poisons are characterized by impurity levels lying between the valence and the conduction band. They are ionised to a certain extent depending on the Permi level of the system. The latter depending on the no. of impurities of hoth kinds, donors and acceptors, and on the temp. When increasing amis, of a donor are adsorbed on the surface, the degree of ionization of the donor decreases with coverage. This decrease corresponds to the interaction between adsorbed species. Quite generally, the degree of ionization of acceptors increases under the influence of increasing amits, of donor impurities, and vice versa for acceptor impurities. The degree of ionization may be expressed as a function of n, the no. of electrons in the conduction band. These principles lead to the computation of the rate of a catalyzed

reaction as a function of n and of the various parameters defining the spectrum of the semiconductor. The assumptions are (1) the reaction involves one (or several) acceptor species and one (or several) donor species; (2) the surface is only sparsely covered with reactants; (3) only neutral reactant take part in the reaction; ionized reactants do not react. Then the rate first increases with increasing n but later decreases with n when n keeps on increasing. Impurities of both kinds affect the reaction rate. A given impurity first acts as a promoter at small conems, but as a poison at larger conems. The theory is not, however, a complete theory of catalyst modification, since it does not consider the detailed mechanism of the activation of reactant species; it describes the effect of the surface on the frequency factor but waives the activation energy. The reaction rate also increases at first with bulk cond, then slows down for larger values of the cond. (n-type in the present case). No data are given in amport of the theory but expts, are suggested to check the relation found between cond, and catalytic activity.

VOL'KENSHTEYN, F. F.

"Some problems of contemporary solid state electron theory," Zh. Tekh. Fiz., vol. 21, 1951, p. 1544 (23 pp.)

B-84049, 7 Apr 55

| Volukenshteyn, W. P. | USSR/Chemistry - Modification of Catalysts (Contd.) their elec cond and treats dependence of elec cond (thus also catalytic activity) on concn of admixts and temp. Theory, though in satisfactory qual agreement with expt in respect to nonmetal catalysts, does not apply to metal catalysts. | Devoted to phenomenon of modification of catalysts (i.e., promotion by poisons, poisoning by promoters); which was discovered in 1940 at Div of Catalysis and Topochem, Inst of Phys Chem, Acad Sci USSR. Compares theoretical and exptl material on relation between activity of nonmetallic cryst catalysts (which are semiconductors) and 194716 | Modification of Catalysts |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| | O men | | |

17 1/6

VOLKENSHTEIN, F. F.

USSR/Physics - Theory of Solid Body Jan/Feb/Mar 51

"Zone Theory of Solid Body and Limitations of Its Applicability," F. F. Volkenshtein

"Uspekhi Fiz Nauk" Vol XLIII, No 1, pp 11-29

Outlines basic preliminary assumptions of zone structure, limitations of applicability to metallic and nonmetallic crystals, lattice "disorder" and its effect on zonal structure, representation of polarons, excitons and doublons. Explains why an incorrect theory (Bloch, Sommerfeld) nevertheless gives good results.

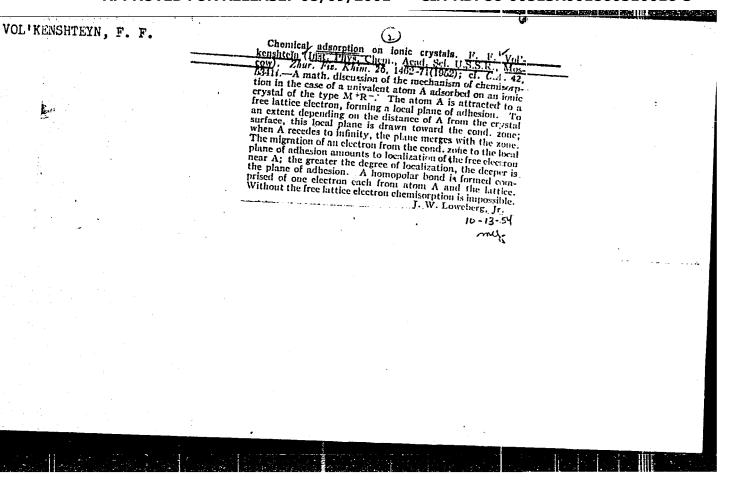
177172

| VOL'KENSHTEYN, F. | F | still 2 other zones of so-called "doublon" states exist. In these states the wave-function decreases exponentially with distance between the electrons. | Abbreviated text of report, published in "Zhur Eksper i Teoret Fiz" 20, 624, 1951. Behavior of Eksper i Teoret Fiz" 20, 624, 1951. Behavior of Electrons in an atomic chain is analyzed from the Heitler-London viewpoint. It is shown that despite states corresponding to independent motion of both electrons, forming the usual zone, | USSR/Physics - Semiconductors, Behavior of Electrons "The Behavior of Electrons in Ionic Crystals," F. F. Vol'kenshteyn, L. Bonch-Bruyevich "Iz Ak Nauk SSSR, Ser Fiz" Vol XVI, No 2, p 231 |
|-------------------|---|---------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | • | | 1 1011 |

| VOLKENSHTEYN, F. F. | USSR/Nuclear Physics - Ionic Crystals Feb 52 (Contd) conjointly within the lattice. Introduces conditions of cycling and computes number of "single" and "double" state electrons. Determines conditions of "doubling"-type state. Received 14 Apr 51. | Analyzes behavior of 2 "excess" electrons in ionic lattice as a multi-electron problem, i.e., outside the zone theory. Obtains 2 different states: "sin gle-electron" corresponding to zone theory (independent electrons), and "doubled" state in which both electrons are rigidly bound together, moving | the Behav Volkens t Fiz" Vo | USSR/Nuclear Physics - Ionic Crystals Feb 5 |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|---------------------------------------------|
| X7°EL 03. | Feb 52 condi- ingle" condi- lh Apr | ionic tside "sin- nde- ich ving | in Lys | eb 52 |

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OL'KENSHTEYN, F.F.

USER/ Chemistry - Adsorption

Card 1/1 : Pub. 40 - 4/22

Authors Vol'kenshteyn, F. F.

Fitle : Electron processes during chemical adsorption. Part 1.-

Periodical : Izv. AN SSSR. Otd. khim. nauk 5, 788-794, Sep-Oct 1953

The results of numerous works on the theory of heterogeneous catalysis, the purpose of which was to determine the elementary (microscopic) mechanism of chemical processes occurring on the surface of a crystal, were analyzed. The problem of adsorption and catalysis is assumed as a physical problem and considered from the viewpoint of the modern theory of the solid body. The problems of the electrons of the crystalline lattice, which take direct part in the surface of the crystal, are discussed. It was noted in several cases that these electrons not only take active participation but even control the chemical processes. Five USSR references (1947-1953). Graphs: drawing.

Institution : Academy of Sciences USSR, Institute of Physical Chemistry

Submitted: March 20, 1953

USSR/Chemistry - Adsorption; Nov/Dec 53
Catalysis
"Electron Processes in Chemical Adsorption, Part II," F.F Vol'kenshteyn, Inst Phys Chem, Acad Sci USSR

Iz Ak Nauk SSSR, OkhN, No 6, pp 972-979
Develops a theory of adsorption phenomena based on electron processes. Points out its importance for the theory of catalysis. This is a continuation of Part I of the article, published in Iz Ak Nauk SSSR, OKhN, No 5, pp 788-794, 1953.

27377

Chemical Abstracts
Vol. 48 No. 5
Mar. 10, 1954
General and Physical Chemistry

VOL KENOHTEYN, F.F.

Theory of activate adsorption. I. P. F. Vol'kenshtel (Inst. Phys. Chem., Acception), C. 1993. A property of the hypothesis that free lattice electrons in the surface zone of cond. act as adsorption centers. The no. of adsorption centers increases with surface charge and with temp. The kinetics has the character typical of activated adsorption, although the potential barrier near the crystal surface in assumed to be absent. II. Ibid. 167-77.—The hypothesis of free electrons as adsorption centers leads to the Freundlich adsorption isothern with exponent 1/2, although the surface is assumed homogeneous, interaction between adsorbed mols. is ignored, and dissoon, is absent. The differential heat of adsorption is a function of the charge. Exposure of the crystal to light of corresponding frequencies increases the no. of adsorption centers, the adsorption capacity of the surface, and the time rate of adsorption. Surface impurities of the acceptor type must decrease the adsorption rate, and capacity of the crystal; donor impurities increase them. These results agree with a no. of expt. data, e.g., the work of Luyckx, et al. (C.A. 36, 5428; 38, 4516), with which the elementary Langmuir adsorption theory is not consistent.

J. W. Loweberg, Jr.

VOL'KENSHTEYN, F.F.

Chemical Abst.
Vol. 48 No. 6
Mar. 25, 1954
General and Physical Chemistry

Activated adsorption on semiconductors. F. P. Volkenshield. Uspekhs Fig. Nauk 50, 263-7011953).—Activated adsorption, i.e. adsorption requiring activation energy, can be either chem. (involving exchange forces) or physical polyton process. The probability that a gas mol. will become attached to an adsorption center is given by $\eta = q r r kT$ (e is activation energy). In the one-electron case of adsorption, the free electrons contained in the conduction band of the surface take an important part is played by the interaction of conduction electrons trapped in surface traps and gas atoms. In both cases adsorption centernare neutral atoms, M. in a layer of surface lons, M. These ntoms contain an uneard, valence reacting with the adsorbed material. Adsorption centers become localized on the surface by the adsorption process. Donors increase, acceptors decrease, the conen, of adsorption centers. Illumination by a wave length corresponding to the inner photocles. effect increases adsorption. New adsorption centers are created when the surface is partially covered at the expense of free electrons in the cond. band. The adsorption law, N ~ \(V_{e} \) is due to the increase of adsorption centers with increasing surface coverage. This increase is a typical feature of the new theory. 10 references.

MF 11-5-54

VOL KENSHTEYN, F. F. USSR/Chemistry Card 1./1 Authors Vol'kenshteyn, F. F. Title Two types of a homeopolar bond during chemical adsorption Periodical Zhru. Fiz. Khim, 28, Ed. 3, 422-432, March 1954 Abstract Investigated are the processes of electron interchange between the surface of the adsorbent and adsorbed atoms. In other words the author investigated the role of the free electrons of the lattice during chemical adsorption. There are two possible types of a bond of a chemically adsorbed atom and a surface: 1) weak (monoelectron) and strong (di-electron) bond. In the state of a weak bond the free valence of an adsorbed atom remains unsaturated. Transformation into a strong bond is accompained by the entrapment

Institution

Academy of Sciences U.S.S.R., Institute of Physical Chemistry

into another. Eight U.S.S.R. references. Graphs.

of the free electron of the lattice by the adsorbed atom. At this point the unsaturated valence of the adsorbed atom becomes saturated. A chemically adsorbed atom can change from one state

Submitted

April 28, 1953

USSIR/ Chemistry Physical chemistry

Card

Pub. 147 - 7/25

Authors

: Bonch-Bruevich, V. L., and Vol'kenshteyn, F. F.

Title

: Conception of the "heterogeneous surface" in adsorption theories

Periodical

: Zhur, fiz, khim, 28/7, 1219 - 1224, July 1954

Abstract

: The physical concept of a heterogeneous surface, in adsoprtion processes is elucidated. The electron processes occurring during adsorption, and, which may lead to certain deviations from the Langmuir adsorption laws, are discussed. It is stated that further development of the theory of heterogeneous surfaces depends upon the knowledge of the physics of heterogeneous surfaces, i.e., knowledge of the elementary mechanism of adsorption processes. Nine USSR references (1935 - 1954).

Institution : Acad. of Sc. USSR, Institute of Physical Chemistry and The Electro-

technical Communications Institute, Moscow

Submitted

: July 7, 1953

Vol'Kenshteyn, f.

ISSR/Chemistry

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luthors

Abstract

ritle

Pub. 147 - 22/27

Vol'kenshteyn, F. F.

Comments on the report by Tolpin, John and Field

Zhur. fiz. khim. 28/9, 1682-1683, Sep 1954 Periodical:

Comments are presented on the report by J. G. Tolpin, G. S. John and E. Field entitled, "Advances in Catalysis", Vol. 5, p. 249-254 (New York 1953). It is claimed that the Americanshave unjustly made certain corrections in a theoretical formula obtained by the author of the comments without first realizing that a certain value in the formula is negative and not positive.

Two references: 1-USSR and 1-USA (1949 and 1953).

Institution:

: June 12, 1954 Submitted

Vel Kenshiteyn, F. F.

AF701597

TREASURE ISLAND BOOK REVIEW

AID 799 - S

F. F. VOL'KENSHTEYN (Institute of Physical Chemistry, Academy of

Sciences, USSR)
DISKUSSIYA (Discussion). In Problemy kinetiki i kataliza
(Problems of Kinetics and Catalysis), vol. 8. Izdatel'stvo
(Problems Nauk SSSR, 1955. Section I: Effect of illumination
on the adsorbability of solids. p. 68-69.

The papers of A. N. Terenin, I. A. Myashikov and S. Ya. Pshezhetskiy have been reviewed. It was experimentally shown in both papers that in some cases under the action of a light quantum, the bond connecting the adsorbed molecule and the solid compound, was ruptured; this results in the desorption of the adsorbed molecule. It was also established that desorption of molecules causes change in the electric conductivity of the crystal. Fig. 1 (p. 69) illustrates the mechanism of chemical adsorption of the O₂ - molecule on the semiconductor. One ref. (Russian) (1953). l diagram.

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all Kindtheyn, T. C.

AF701597

TREASURE ISLAND BOOK REVIEW

AID 806 - S

VOL'KENSHTEYN, F. F. (Institute of Physical Chemistry, Academy of

Sciences, USSR)
NEKOTORYYE VOPROSY ELEKTRONNOY TEORII KATALIZA NA POLUPROVODNIKAKH
(Some problems of the electronic theory of catalysis on semiconductors). In Problemy kinetiki i kataliza (Problems of
conductors), vol. 8. Izdatel'stvo Akademii Nauk SSSR,
Kinetics and Catalysis), vol. 8. Izdatel'stvo Akademii Nauk SSSR,
1955. Section II: General problems of the theory of catalysis.
p. 79-96.

Free valences on the surface of the catalysts, the adsorption of free atoms and radicals, reactivity of adsorbed atoms, the role of free valences in the adsorption of saturated molecules, and some types of heterogeneous reactions are covered in this paper. (based on studies carried out by the author with S. Z. Roginskiy, (based on studies carried out by the author introduces the V. V. Voyevodskiy, and N. N. Semenov). The author introduces the concept of crystal as a "polyradical", i.e., the crystal possesses free valences on its surface and, in addition, contains some other valences which can be opened ("made free") in the course of the reaction. The crystal acts as a catalyst in accordance with two rules: 1) the retention of the total number of valences and 2) the tendency of the valences to saturation. The radical

1/2

VOL'KENSHTEYN, F. F., Nekotoryye voprosy..... AID 806 - 3

mechanism of heterogeneous catalysis is just the chemical aspect of mechanisms, based on the electronic theory. 9 ref., all Russian (1947-1955).

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AF701597

TREASURE ISLAND BOOK REVIEW

AID 827 - S

VOL'KENSHTEYN, F. F. (Institute of Physical Chemistry, Academy of Sciences, USSR) DISKUSSIYA (Discussion). In Problemy kinetiki i kataliza (Problems of Kinetics and Catalysis), vol. 8. Izdatel'stvo Akademii Nauk SSSR, 1955. Section III: Connection between the electric conductivity and catalytic activity of semiconductors. p. 201-203.

Review of the relationship between electric conductivity and catalytic activity of semiconductors based on experiments reported in papers by K. I. Matveyev and G. K. Bouskov, p. 168-174; I. A. Myasnikov and S. Ya. Pshezhetskiy, 175-179; and V. I. Lyashenko and J. J. Stepko, 180-188.

In accordance with the electron theory, the catalytic activity of semiconductors depends on the concentration of electron gas on the surface. Under conditions of equilibrium, this concentration is connected with the concentration of electron gas inside the semiconductor,

Addition of oxygen to ZnO decreases the electric conductivity and inhibits the dehydrogenation of isopropyl alcohol. The 1/2

. VOL'KENSHTEYN, F. F., Diskussiya

AID 827 - S

mechanism of the reaction is illustrated on p. 202. One reference (Russian) (1951).

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AF701597

TREASURE ISLAND BOOK REVIEW

AID 823 - S

VOL'KENSHTEYN, F. F. and V. B. SANDOMIRSKIY (Institute of Physical Chemistry, Academy of Sciences, USSR).

O SVYAZI MEZHDU KATALITICHESKIMI SVOYSTVAMI POVERKHNOSTI POLUPROVODNIKA I YEGO OB"YEMNYMI ELEKTRONNYMI SVOYSTVAMI (Connection between the catalytic properties of the surface and the space electron properties of semiconductors). In Problemy kinetiki i kataliza (Problems of Kinetics and Catalysis), vol. 8. Izdatel'stvo Akademii Nauk SSSR, 1955. Section III: Connection between the electric conductivity and catalytic activity of semiconductors. p. 189-197.

The establishment of electronic equilibrium between the surface and space of the semiconductor shows that the concentration of free valences on the surface depends on the characteristics of the space. In the case of small crystals, the characteristics of the surface do not depend on space, and, conversely, in larger crystals, the characteristics of volume do not depend on the surface. Adsorption on the surface of the crystal changes the concentration of the electron gas inside small crystals, thus affecting the electric conductivity. If atoms-acceptors are adsorbed by the surface of a semiconductor, the electric conductivity will

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VOL'KENSHTEY, F. F. and V. B. SANDOMIRSKIY. O svyazi . . . AID 823 - S

decrease; the adsorption of atoms-acceptors on a hole-rich semiconductor will increase the conductivity. Five references, 4 Russian (1937-1955). One table, 3 diagrams.

2/2

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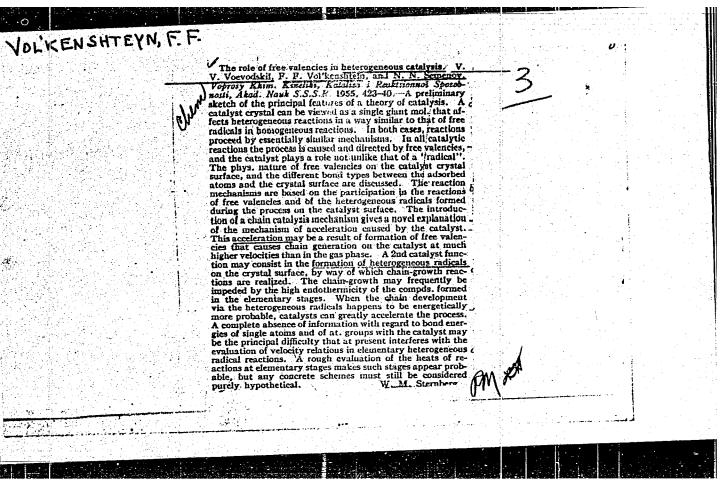
TREASURE ISLAND DOOR RLVIEW

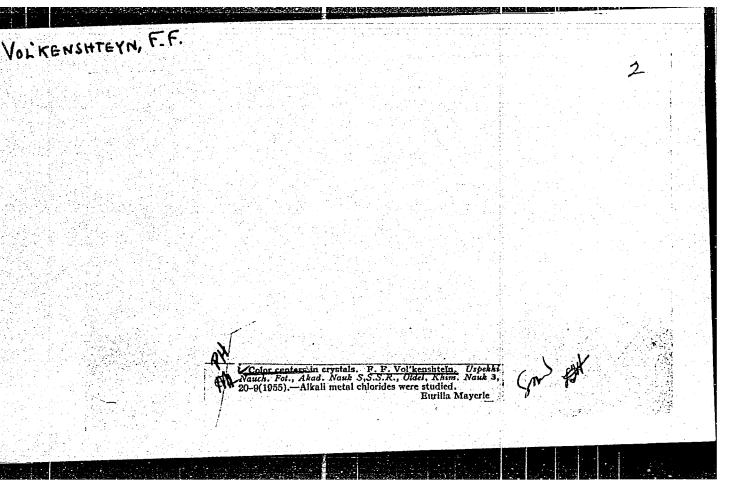
AID 832 - S

VOL'KENSHTEYN, F. F. and V. L. BONCH-BRUYE /ICH (Moscow Electrical Communication Institute and Institute of Physical Chemisty, Academy of Gaiences, USSR). PONYATIYE (HED. MORODNOY PO/IRKELDSTI) V TEORIYAKH ADSOLDISII (The concept of "nonuniform surface" in adsorption theories). In Problemy kinetiki i kataliza (Problems of Kinetics and Catalysis), vol 8. Izdatol stvo Akademii Wauk 358, 1955. Section IV: Nature of the active surface. p/ 218 - 223.

Studies conducted by the authors have been discussed form the viewpoint of the concpt of "nonuniform surface" which take place during adsorption may result in deviation form Langmuir's regularities. The concentration of free atoms in semiconductors depends on temperature and concentration of the admixtures in the adsorbent crystal. When the electrons in the conduction zone of the adsorbent surface act as adsorption centers, their number depends on the number of atoms adsorbed. No only electrons, but lattice defects as well may act as adsorption centers. The distribution functions is a characteristic of the entire system, i.e., adsorbent and adsorbate. Mine references, all dussian (1935-1954).

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VOL'KENSHTEYN, F.F.; ROGINSKIY, S.Z.

Ionic bond in the chemical adsorption on semiconductors. Zhur.fiz.khim. 29 no.3:485-495 Mr 155. (MIRA 8:7)

1. Akademiya nauk SSSR, Institut fizicheskoy khimii, Moscow (Adsorption) (Semiconductors)

VOL'KENSHTEYN, F.F.

SUBJECT

USSR / PHYSICS

CARD 1 / 2

PA - 1699

AUTHOR

VOL'KENSTEJN, F.F.

Semiconductors as Catalyzers of Chemical Reactions.

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This work investigates the basic phenomena and the basic notions of catalysis and enumerates the main problems connected with the utilization of semiconductors as catalyzers. On the All-Soviet Conference on Semiconductors (Leningrad, November 1955), a special department was installed for "Semiconductor Catalysis". The present survey is arranged as follows: Activity and selectivity of a catalyzer, adsorption as a stage of catalysis, electron processes on the occasion of chemosorption, various types of binding connected with chemosorption, the reactivity of adsorbing molecules, the adsorptiv capacity of the surface, catalytic activity and the part played by admixtures, catalytic activity and electric conductivity.

Summary: The factsmentioned in this article supply a sufficient amount of evidence to show that the catalytic properties of semiconductors are connected with the electron processes occurring on the surface of the semiconductor and are, after all, caused by them. Therefore, the chemical problem of catalysis may at the same time be described as a problem of semiconductor physics. The catalytic process actually has an electronic mechanism. The electron theory of catalysis, which is based on semiconductors, aims at explaining the elementary mechanism of the catalytic act. This theory is based

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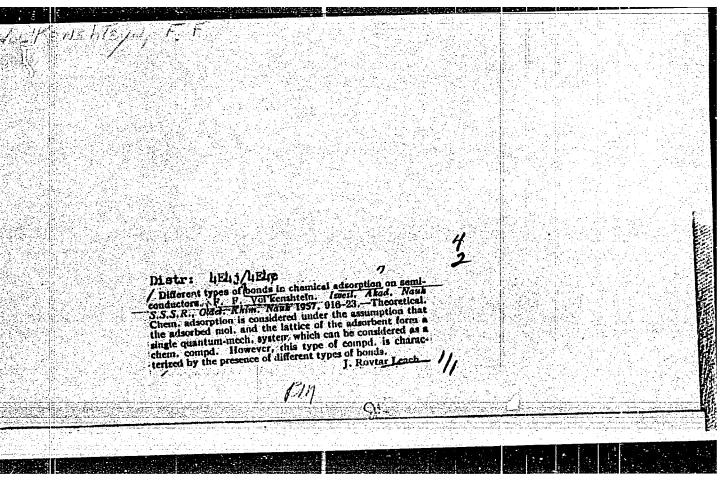
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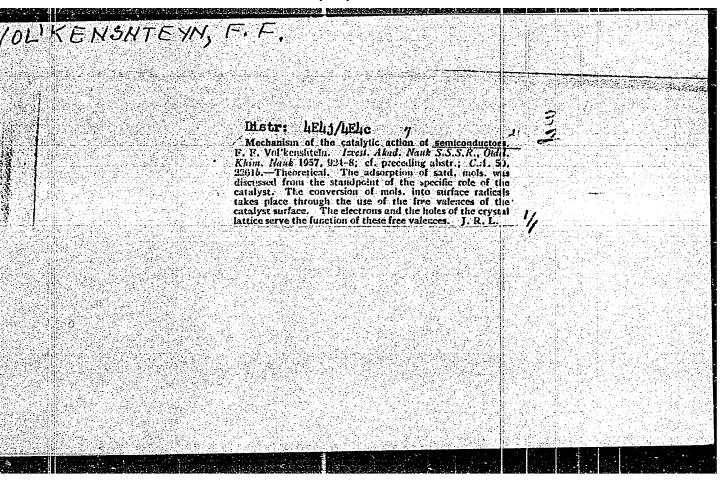
Usp.fis.nauk, 60, fasc.2, 249-293 (1956) on the one hand on the theory of semiconductors, and on the other on the theory of chemical bindings; at present it is in the act of being developed. It may be said that we are faced with a certain tendency of theoretical and experimental research within the field of catalysis. This new tendency came

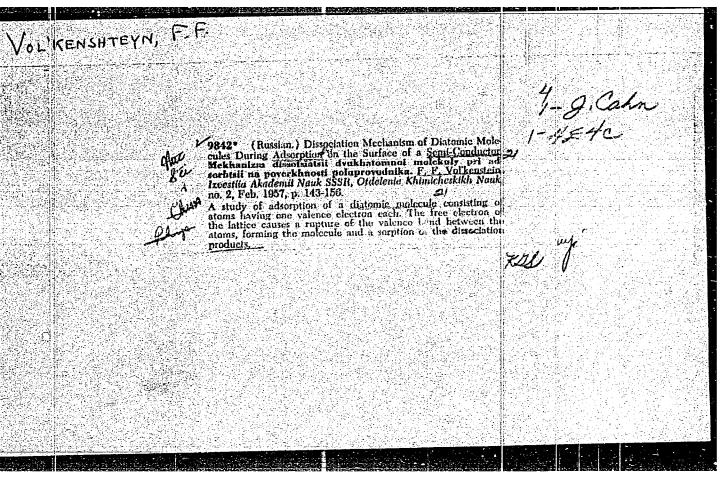
into being about 10 years ago in the Laboratory for Catalysis of the Institute for Physical Chemistry of the Academy of Science in the USSR by the initiative of S.Z.ROGINSKIJ. Several years later this tendency began to spread also outside the Soviet Union, and at present quite a number of foreign (i.e. non-Soviet) laboratories and also some research workers (physicists and physico-

chemists) are working in this field. It is a characteristic feature of our times that experiment lags a little behind theory, and this is particularly the case with Soviet works. Several theoretical prognoses have hitherto not been confirmed by experiment. Furthermore, such experimental material as might serve as a basis for theoretical research is as yet inadequate. There exists as yet no theory by means of which the physical mechanism of catalytic processes might be explained. The so-called electron theory of catalysis is now about to venture upon the first stages of development in this direction.

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Charging the semiconductor surface during adsorption. Vest. Kosk.

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(Adsorption) (Semiconductors)